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Bruce Lehman
Commissioner of Patents and Trademarks

Attest

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United States Patent [19]

Yonemitsu et al.

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[45] Date of Patent: Aug. 11, 1998

[54] **OPTICAL DISK AND METHOD AND APPARATUS FOR RECORDING AND THEN PLAYING INFORMATION BACK FROM THAT DISK**

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[52] **U.S. Cl.** **371/402**; 371/374

[58] **Field of Search** 371/37.1, 37.5, 371/37.4, 40.1

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[57] **ABSTRACT**

An optical disk having a diameter less than 140 mm and, a thickness of 1.2 mm±0.1 mm, with a plurality of record tracks having data recorded thereon as embossed pits representing information and exhibiting a track pitch in the range between 0.646 μm and 1.05 μm; with the tracks being divided into a lead-in area, a program area and a lead-out area. The data includes table of contents (TOC) information recorded in a plurality of sectors in at least one TOC track and user information recorded in a plurality of sectors in user tracks; with the TOC information including addresses of start sectors recorded in the user tracks. The data (both user and TOC information) is encoded in a long distance error correction code having at least eight parity symbols, and is run length limited (RLL) modulated.

64 Claims, 29 Drawing Sheets